

## Abstract Disclosure

[0039] The inventive coupling device enables a high interconnection density of single mode optical fiber in active and passive devices used in a fiber optic telecommunication system. The coupling device comprise a micro-lens formed by terminating a single mode optical fibers with an optimized gradient index fiber, thus avoiding a significant increase in fiber diameter. The gradient index is optimized to provide a long working distance to the minimum spot size so that efficient coupling can be achieved in a free space interconnection between either multiple single mode fibers or a single mode fiber to a transmitting or receiving device.